

We Claim:

1. A stimulator for tremor control, comprising:  
a pulse generator for generating digital signal pulses;  
a digital signal processor connected to said pulse generator for generating an approximate sine wave output that is further processed in first and second circuits; and  
at least two pairs of surface electrodes connected to said digital signal processor and positioned at predetermined peripheral surface stimulation sites on a subject's skin surface, wherein said at least two pairs of surface electrodes stimulate the subject's brain.
2. The stimulator of claim 1, wherein said at least two pairs of surface electrodes connected to said digital signal processor produce an interferential current output waveform from said first and second circuits.
3. The stimulator of claim 2, wherein said interferential current output waveform includes a base medium frequency of at least 1 KHz but no more than 100 KHz.
4. The stimulator of claim 2, wherein said interferential current output waveform includes a resultant beat frequency of no more than 250 Hz.
5. The stimulator of claim 1, wherein said at least two pairs of surface electrodes connected to said digital signal processor are positioned on the subject's skin surface using positron emission tomography and neural imaging devices to identify the peripheral surface stimulation sites.
6. The stimulator of claim 1, wherein said at least two pairs of surface electrodes connected to said digital signal processor are positioned on the subject's kin surface using dermatome maps to identify the peripheral surface stimulation sites.
7. A stimulator for tremor control, comprising:  
a pulse generator for generating digital signal pulses;  
a field-programmable gate array connected to said pulse generator for processing the digital signal pulses to approximate a sine-wave output waveform that is further processed in first and second circuits; and  
at least two pairs of surface electrodes connected to said field-programmable gate array and positioned at predetermined peripheral surface stimulation sites on a subject's skin surface, wherein said at least two pairs of surface electrodes stimulate the subject's brain.

8. The stimulator of claim 7, wherein said at least two pairs of surface electrodes connected to said field-programmable gate array produce an interferential current output waveform from said first and second circuits.
9. The stimulator of claim 8, wherein said interferential current output waveform includes a base medium frequency of at least 1 KHz but no more than 100 KHz.
10. The stimulator of claim 8, wherein said interferential current output waveform includes a resultant beat frequency of no more than 250 Hz.
11. The stimulator of claim 7, wherein said at least two pairs of surface electrodes connected to said field-programmable gate array are positioned on the subject's skin surface using positron emission tomography and neural imaging devices to identify the peripheral surface stimulation sites.
12. The stimulator of claim 7, wherein said at least two pairs of surface electrodes connected to said field-programmable gate array are positioned on the subject's skin surface using dermatome maps to identify the peripheral surface stimulation sites.
13. A method for electrical stimulation of a subject's brain for treatment of neural disorders, said method comprising:
  - connecting a pulse generator to a digital signal processor and supplying digital signal pulses to said digital signal processor for producing an approximate sine wave current waveform which is further processed and output to first and second pairs of surface electrodes, wherein first and second circuits are created, respectively; and
  - positioning said first and second pairs of surface electrodes at predetermined peripheral surface stimulation sites on the subject's skin surface.
14. The method according to claim 13, wherein said method further includes creating an interferential current with a base medium frequency of at least 1KHz but no more than 100 KHz.
15. The method according to claim 14, wherein said method further includes creating the interferential current with a resultant beat frequency of no more than 250 Hz.
16. The method according to claim 13, wherein said method further includes positioning said first and second pairs of surface electrodes using positron emission tomography and neural imaging devices to locate said peripheral surface stimulation sites.

17. The method according to claim 13, wherein said method further includes varying said positioning of said first and second pairs of surface electrodes.
18. The method according to claim 13, wherein said method further includes applying said approximate sine wave current waveform to said peripheral surface stimulation sites for at least 30 minutes but no more than 60 minutes.
19. A method for electrical stimulation of a subject's brain for treatment of neural disorders, said method comprising:  
connecting a pulse generator to a field-programmable gate array and supplying digital signal pulses to said field-programmable gate array for producing an approximate sine wave current waveform which is further processed and output to first and second pairs of surface electrodes, creating first and second circuits, respectively; and  
positioning said first and second pairs of surface electrodes at predetermined peripheral surface stimulation sites on the subject's skin surface.
20. The method according to claim 19, wherein said method further includes creating an interferential current with a base medium frequency of at least 1 KHz but no more than 100 KHz.
21. The method according to claim 20, wherein said method further includes creating the interferential current with a resultant beat frequency of no more than 250 Hz.
22. The method according to claim 19, wherein said method further includes positioning said first and second pairs of surface electrodes using positron emission tomography and neural imaging devices to locate said peripheral surface stimulation sites.
23. The method according to claim 19, wherein said method further includes varying said positioning of said first and second pairs of surface electrodes.
24. The method according to claim 19, wherein said method further includes applying said approximate sine wave current waveform to said peripheral surface stimulation sites for at least 10 minutes but no more than 180 minutes.
25. A method for electrical stimulation of a subject's brain for tremor control, said method comprising:  
positioning at least two pairs of surface electrodes at predetermined peripheral surface stimulation sites on the subject's skin surface; and

supplying electrical stimulation to said at least two pairs of surface electrodes.

26. The method according to claim 25, wherein said method further includes supplying electrical stimulation from the group consisting of TENS, neuro-muscular, ultrasound, interferential, PEMF, EMF and mechanical stimulation.

27. A stimulator for tremor control, comprising:  
a pulse generator for generating electrical pulses; and  
at least one pair of surface electrodes connected to said pulse generator and positioned at predetermined peripheral surface stimulation sites on a subject's skin surface,  
wherein said at least one pair of surface electrodes stimulate the subject's brain.

28. The stimulator of claim 27, wherein said at least one pair of surface electrodes connected to said pulse generator produce a pulsatile current with a square wave output.

29. The stimulator of claim 28, wherein said pulsatile current includes an amplitude range from 0-150 mA and a pulse width of 1-500  $\mu$ sec.

30. The stimulator of claim 27, wherein said pulsatile current includes a frequency range from 1 pps to 2500 pps.

31. The stimulator of claim 27, wherein said at least one pair of surface electrodes connected to said pulse generator are positioned on the subject's skin surface using positron emission tomography and neural imaging devices to identify the peripheral surface stimulation sites.

32. The stimulator of claim 27, wherein said at least one pair of surface electrodes connected to said pulse generator are positioned on the subject's skin surface using dermatome maps to identify the peripheral surface stimulation sites.

33. A method for electrical stimulation of a subject's brain for treatment of neural disorders, said method comprising:

positioning at least one pair of surface electrodes at predetermined peripheral surface stimulation sites on the subject's skin surface; and

connecting a pulse generator to said at least one pair of surface electrodes and generating an electrical current.

34. The method according to claim 33, wherein said method further includes creating a pulsatile current with a square wave output, an amplitude range from 0-150 mA and a phase duration range of 1-500  $\mu$ sec.
35. The method according to claim 34, wherein said method further includes creating the pulsatile current with a frequency range from 1 pps to 2500 pps.
36. The method according to claim 33, wherein said method further includes positioning said at least one pair of surface electrodes using positron emission tomography and neural imaging devices to locate said peripheral surface stimulation sites.
37. The method according to claim 33, wherein said method further includes varying said positioning of said at least one pair of surface electrodes.
38. The method according to claim 33, wherein said method further includes applying said electrical current to said peripheral surface stimulation sites with a duty cycle from as little as 1 second to 120 minutes on with an off time as little as 1 second to as long as 120 minutes.
39. The method according to claim 33, wherein said method further includes applying said electrical current continuously without a duty cycle.